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APPENDIX B

Substitute Claims

10. A system for oxygen delignification of pulp having
a lignocellulose-containing material having a mean concentration
of 8-18% pulp consistency, the oxygen delignification taking
place in at least two stages and where the system comprises:
a first pump arranged to pump the pulp to a first mixer
for admixing, in the first mixer, chemicals that are required for
an oxygen delignification process, the first mixer being arranged
in close conjunction with the first pump;
a first delignification zone arranged to receive pulp
from the first mixer;
a second pump subsequent to the first delignification
zone and ahead of a second delignification zone;
a third mixer arranged in close conjunction with the
second pump, for admixing, in the third mixer, chemicals that are
required for the oxygen delignification process;
a second delignification zone arranged to receive pulp
from the third mixer;
a second mixer arranged to receive pulp from the first
delignification zone, the second mixer having means for admixing
steam with the pulp; and
the second pump being arranged to receive pulp after
the second mixer and having a pumping effect to obtain a lower
oxygen partial pressure in the first delignification zone
compared with a pressure in the second delignification zone.

11. The system for oxygen delignification according to
claim 10 wherein the first and third mixers are mixers using
mechanical agitation and with the pulp at least partially being
fluidized in gaps defined in the mixers, and the second mixer is
a static mixer without mechanical agitation.

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PATENT

12. The system for oxygen delignification according to claim 11 wherein the system has means for adding oxygen to the first mixer and the third mixer, respectively, and means for adding steam to the second mixer.

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13. The system for oxygen delignification according to claim 12 wherein the second mixer has means for supplying steam in a controllable manner that is feedback-controlled depending upon a temperature of the pulp after the second mixer.

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A, 14. The system for oxygen delignification according to claim 13 wherein the second mixer has a pulp-conveying pipe having a number of inlet holes defined therein for receiving steam.

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15. The system for oxygen delignification according to claim 14 wherein the steam consists of a medium-pressure steam at a pressure of 8-14 bar.

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16. The system for oxygen delignification according to claim 12 wherein the system comprises a control system for controlling a rotational speed of the second pump depending upon a pressure in the first delignification zone.

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17. The system for oxygen delignification according to claim 10 wherein the first delignification zone has a volume that results in a dwell time of 2-20 minutes for the pulp in the first delignification zone, the pressure in the first delignification zone is at a pressure of 0-6 bar, the second pump has a pumping effect such that a pressure in the second delignification zone reaches a level of at least 3 bars over-pressure at a top of the second delignification zone, the second delignification zone has a volume that is at least 10 times greater than the volume of the

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RF:ej 1/7/02 128.833USN

PATENT

first delignification zone and the volume of the second delignification zone results in a dwell time of at least 20-200 minutes.

5 18. The system for oxygen delignification according to claim 17 wherein the dwell time of the first delignification zone is 2-10 minutes.

10 19. The system for oxygen delignification according to claim 17 wherein the dwell time of the first delignification zone is 3-6 minutes.

15 20. The system for oxygen delignification according to claim 17 wherein the pressure in the first delignification zone is 0-4 bar.

20 21. The system for oxygen delignification according to claim 17 wherein the dwell time of the second delignification zone is 20-100 minutes.

25 22. The system for oxygen delignification according to claim 17 wherein the dwell time of the second delignification zone is 50-90 minutes.

30 23. A process for oxygen delignification of pulp having a lignocellulose-containing material having a mean concentration of 8-18% pulp consistency, the oxygen delignification taking place in at least two stages, comprising:

- (a) pressurizing a median concentration pulp;
- (b) adding chemicals to the oxygen delignification process in a first stage;
- (c) treating the pulp for 2-20 minutes under a moderate over-pressure of between 0-6 bar and at a

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PATENT

first temperature in a range of 75-95°C;

- (d) mixing the pulp with steam to heat the pulp;
- (e) pressurizing the heated pulp;
- (f) adding chemicals to the oxygen delignification process in a concluding stage; and
- (g) treating the pulp for 2-200 minutes at an initial pressure of 8-10 bar corresponding to a pressure at an inlet defined in a reactor and at a second temperature in a range of 90-110°C, the treating step (c) being longer than the treating step (g) and the second temperature being higher than the first temperature.

24. The process according to claim 23 wherein step (b) comprises adding chiefly oxygen.

25. The process according to claim 23 wherein step (c) comprises treating the pulp for 2-10 minutes.

26. The process according to claim 23 wherein step (c) comprises treating the pulp for 3-6 minutes.

27. The process according to claim 23 wherein step (c) comprises treating the pulp at an over-pressure of 0-4 bar.

28. The process according to claim 23 wherein step (f) comprises adding chiefly oxygen.

29. The process according to claim 23 wherein step (g) comprises treating the pulp for 20-100 minutes.

30. The process according to claim 23 wherein step (g)

RF:sj 1/7/02 129.833USN

PATENT

comprises treating the pulp for 50-90 minutes.

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31. The process according to claim 23 wherein the second temperature is at least 5°C higher than the first temperature.
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